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ABSTRACT

Project COULD (Career Orientation Utilizing Language Development) was developed as a means of building skills, knowledges, and attitudes on elementary children's previously acquired backgrounds. Children learn to speak the grammar and vocabulary characteristic of the language heard most frequently at home and in the immediate environment. Each unit of this instructional guide is designed to promote vocational awareness, exploration, and language development. The information in this unit on logging transportation was prepared for use at the fourth grade level for an approximate period of four weeks. It is divided into eight sections: a summary, an outline of the entire set of units for the category of lumbering, Project COULD's goals, a list of the performance objectives, a vocabulary list, suggested learning activities, numerous resource materials (films, filmstrips, transparency sets, instruction sheets, pamphlets, books, records, slides, resource people, and a resource outline questionnaire), and background information on the lumber industry (job and process flow charts, job summaries, and suggested teacher reading). (Author/BP)

ED 098349
CE 002 429

CAREER ORIENTATION UTILIZING LANGUAGE DEVELOPMENT

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PROJECT COULD

AN ESEA, TITLE III PROJECT SERVING COOS COUNTY, OREGON

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L #2
LOGGING TRANSPORTATION
GRADE 4

RECEIVED
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NMSU
E.R.I.C.

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PROJECT COULD

CAREER ORIENTATION UTILIZING LANGUAGE DEVELOPMENT

A PACE PROJECT

Elementary and Secondary Education Act of 1965

Project COULD was developed as a means of building skills, knowledges, and attitudes upon elementary children's previously acquired backgrounds. Children learn to speak the grammar and vocabulary characteristic of the language heard most frequently at home and in the immediate environment.

A series of units of instruction were developed from the concepts and vocabulary of the industries indigenous to Coos County. The intention was to promote vocational awareness, exploration and language development for the students in grades 3 through 8.

The information in this unit was prepared for use at the fourth grade level for an approximate period of four weeks.

Materials prepared by Project COULD are available from the IMC of Coos County Intermediate Education District, 2405 Colorado Street, North Bend, Oregon, 97459

SCHEDULE OF UNITS

Grade Level	Lumbering
Grade 3 Unit L #1	Logging
Grade 4 Unit L #2	Logging Transportation
Grade 5 Unit L #3	Wood Processing
Grade 6 Unit L #4	Marketing Wood Products
Grade 7 Unit L #5	Lumbering Ecology
Grade 8 Unit L #6	Coos County Careers in Lumbering

SUMMARY

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This instructional guide is divided into eight sections. Each section is tabulated for easier use and quick reference.

Summary:

The intentions and reasoning for this program have been stated. For effective results, it is suggested that the teacher becomes totally familiar with the curriculum guide before beginning.

Outline:

This section gives an overall view of all of the sequenced units. Details of the information to be covered in this unit are specifically outlined.

Goals:
Objectives:
Activities:

These three sections are sequentially integrated to clearly define what activities are suggested for a particular objective and a particular goal. Each goal is numbered to correlate directly with objectives, activities and resources.

Vocabulary:

All terminology found in the unit, including particular occupations, is included in this section. Each term is defined. These definitions are intended for teacher use only.

Resources:

Locally produced material, Coos County resource people, books, pamphlets and commercially prepared media are listed with reference made to activity correlation.

Background:

This section contains additional material for teacher use.

LOGGING TRANSPORTATION

UNIT L #2 OVERVIEW

The following outline represents the scope of the entire set of units (Grades 3-8) for the category of LUMBERING. Only the outline for this unit is in its completed form.

SUGGESTED TIME: FOUR WEEKS

Transportation Jobs: 1 week
Transportation Terminology and Interviews: 3 days
Methods of Transportation and Field Trips: 6 days
Environmental Factors: 4 days
Economic Influences: 5 days

(UNIT L #1) LOGGING
- A. The many jobs of the logger
- B. Logging terminology relating to the jobs of the logger
- C. Two main types of logging shows
- D. Environmental factors affecting logging
- E. Influence of logging on the economy

(UNIT L #2) LOGGING TRANSPORTATION
- A. Jobs in log transportation
  1. Log Truck Drivers
  2. Stacker Operator-reload yard
  3. Scaler
  4. Lead Yard Man
  5. Yard Bucker
  6. Stacker Operator
  7. Shovel Operator
  8. Second Loader
  9. Dump Operator
  10. Dump Helper
  11. Boatman
  12. Rafter
  13. Tug Operator
  14. Mechanic
- B. Terminology relating to jobs in logging transportation (See vocabulary)
- C. Two main methods of log transportation
  1. Truck
  2. Water
- D. Environmental factors affecting transportation
  1. Weather
  2. Geography
     a. Sandstone belt
     b. Accessibility of trees
     c. Navigable rivers

OUTLINE

E. Influence of log transportation on the economy

(UNIT L #3) WOOD PROCESSING
- A. The many jobs of the millworker
- B. Terminology relating to the jobs of the millworker
- C. Three main types of milling processes
- D. Environmental factors
- E. Influences of the lumber processing industry on the economy

(UNIT L #4) MARKETING WOOD PRODUCTS
- A. Jobs in marketing
- B. Marketing terminology
- C. Wholesale and retail markets
- D. Environmental factors
- E. Economic relationships

(UNIT L #5) LUMBERING ECOLOGY
- A. Workers involved in environmental quality control
- B. Technical terminology relating to environmental quality control
- C. The different methods used to control the quality of the environment in Coos County
- D. The way in which the quality of the environment affects the economy of the County

(UNIT L #6) COOS COUNTY CAREERS IN LUMBERING
- A. Opportunities for employment
- B. Occupational interest inventory
- C. Steps in applying for a job
- D. The job interview
- E. Employment vocabulary

GOALS

1. To make the students aware that log transportation in Coos County offers various opportunities for employment on a full-time basis.

2. To make the students aware that the log transportation industry has a unique set of terms used to facilitate communications among the people working in that industry.

3. To make the students aware that there are two main methods used to transport logs from the woods to the mill.

4. To make the students aware of the environmental factors which influence and are influenced by the log transportation industry in Coos County.

5. To make the students aware that log transportation plays an integral part in the total economy of Coos County.

The intention of Project COULD units is to utilize the language arts areas of reading, writing, listening, and speaking, as the vehicles to promote vocational awareness and exploration. It is <u>not</u> to dictate language arts curriculum, but to suggest that the vocational areas under consideration do have unique languages and concepts.

It is assumed that the language development aspect of the activities will be commensurate with the on-going language arts programs of the students participating in the various units prepared by COULD.

PERFORMANCE OBJECTIVES

1. Given the crossword puzzle of job descriptions and random list of key occupations, each learner will complete the puzzle with a level of accuracy satisfactory to the teacher, and within a time limit imposed by the teacher.

2. Given the vocabulary words as listed in the VOCABULARY section of this unit, with student-derived definitions, each learner will choose at least four words and write a riddle for each on a 5 x 8 card with the answer to the riddle on the back of the card. The standard quality for the riddles and the time limit shall be imposed by the teacher.

3. Given a choice of occupation titles in the log transportation industry and 30 minutes, each learner will select the title of the job he would like to have and write a job description in paragraph form including answers to at least three of the following questions:

   What hours do I work?
   In what type of physical condition do I have to be to work on my job?
   Do I have to wear any special clothing? Why?
   What is my equipment called?
   Why do I like to do this type of work?
   What is dangerous about my job?

4. Given the COULD prepared study print entitled, THE LOG TRANSPORTATION ENVIRONMENT, and twenty minutes, each learner will select the print that represents the best method of transporting logs and preserving the environment, and the print that represents the worst method of transporting logs and preserving the environment; and write a paragraph for each explaining the reasons for his choice. The teacher will judge the validity of each learner's response.

5. Each learner will list, in a time span imposed by the teacher, at least six (6) ways in which loss of income provided by jobs in the log transportation industry would affect the economy of Coos County.

THE DEFINITIONS PROVIDED ARE INTENDED FOR TEACHER USE. IT IS SUGGESTED THAT THE STUDENTS FORMULATE THEIR OWN DEFINITIONS THROUGH THE ACTIVITIES OF THIS UNIT.

VOCABULARY AND SPELLING

In this unit 37 vocabulary words and 15 key occupations are discussed. These words and occupations can and should be used as a part of the spelling program in the classroom. You as the teacher, are the best judge as to how this should be done in your classroom. No matter how you approach the matter, remember that it is just as important to know how to spell the word as it is to know how to use it correctly in speaking.

MASTER VOCABULARY LIST

A permanent listing of all current vocabulary words should be available to the students at all times during the study of Logging Transportation. Having this list of words and their definitions readily available to the children on charts, the overhead projector, the blackboard or a vocabulary notebook will provide the children with an immediate reference should the need arise. A professional in-depth type of definition will not be nearly as valuable to the children as one that they have written, discussed and put on the master list themselves. If a definition is to be useful, it must be easily understood by the children.

VOCABULARY

BINDER	An iron mechanism which tightens the wrappers* around a load of logs.
BOOM	A group of logs held into a raft by boom sticks*.
BOOM STICKS	Long logs which are chained together to contain other logs in booming*. Any number may be chained together to form various sized booms. (See Header Peaker)
BRAIL	Logs floating in the pond that will be put into the raft or boom*.
BUCK	(To buck a log) To cut a log into smaller logs.
CORK BOOTS	Boots with short, heavy nails on the soles and heels. These boots provide sure footing on logs. Also known as corks or calked boots.
CRANE	See shovel.
DUMP	(To dump logs) To take the logs off the trucks and place them into the water.
ENVIRONMENT	Everything in the surroundings in which we live and work.
GRAPEL	Usually a two (sometimes three) pronged apparatus at the end of the shovel* cable resembling a thumb and forefinger type lever. Used to grasp or grapel logs.
HARD HAT	A hat worn by transportation workers to protect them from head injuries.
HEADER	The log used to close off the back end of a boom* or raft. It is one of the boom sticks*.
HIGHWAY RIG	A log truck used to transport logs on the highway.
HYPOTHESIS	A proposed explanation for a happening; an assumption or guess.
KNOT	(To knot a log) To knock or saw knots or limbs off the log.

*Defined within the vocabulary section

LANE	(Also known as ALLEY) A long area, about 50 feet wide outlined by pilings*. Boom sticks* are attached to the pilings with the header* left open so that brails* may be shoved inside to form a raft or boom*.
LIMB	(To limb a log) To cut branches off a log.
LOG BOOM	A raft or group of logs in the water contained by boom sticks*.
LOG BRONC	A special boat to maneuver logs in the water.
LOG POND	The pond or portion of the river or bay into which logs are dumped*.
OFF HIGHWAY RIGS	Log trucks used to transport logs from the logging site to the sort yards*. These trucks are larger than the highway rigs and can hold more logs.
PEAKERS	Two logs used to form a bow on the log raft or boom*. They are boom sticks*.
PEAVY or PEAVEY	A heavy handled tool with a spike point and free swinging hook used to roll logs.
PIKE POLE	Long aluminum pole with a spike and fixed hook at one end. Used to shove logs into rafts or booms*.
PILING	Logs pounded into the log pond* bottom. These act as guides in forming and anchoring the boom sticks* into an open position so that logs may be put into place inside.
POCKET	An area in which the logs are stowed before being formed into rafts or booms*.
RAFT	See Log Boom.
SCALE	(To scale a log) To determine the number of cubic feet in a log.
SCALING STICK	A measuring stick used to determine the diameter of logs.
SHOVEL	A machine that resembles a steam shovel with a grapel* in place of the shovel. Used to load logs onto trucks.
SORT YARD	A large area where logs are separated by grade, species, and for different purposes such as sawmill, plywood, export, etc.
SPOT	(To spot a log truck) To place the truck in a position which will enable proper loading or unloading of logs and/or trailers.

*Defined within the vocabulary section

STACKER	A large forklift type loader. The bottom prongs are positioned under the load of logs and the top hinged prongs then squeeze the load and hold it in place as it is moved.
STRAP	A wire rope around logs on a truck to prevent the load from spilling.
SWIFTER	A length of nylon rope that is tied from a boom stick* on one side of the boom* to one on the opposite side. These swifters keep the boom from losing its shape during towing.
TRACTOR	The motorized part of the log truck.
WRAPPERS	A steel cable used to hold a load of logs on a truck.

* Defined within the vocabulary section

KEY OCCUPATIONS

BIG STACKER OPERATOR	Drives up to the truck and positions the stacker* and grasps the load of logs. Unloads the logs and places them in a pile for the Lead Yard Man* to scale*.
BOATMAN	Drives the log bronc*. Sorts the logs that have been dumped and pushes them into lanes according to whether they are marked for peeler (plywood) or sawmill use.
DECK HAND	Climbs onto the log boom* and attaches the towline. If the boom breaks in towing, repairs the boom. Helps the Captain* with minor repairs and service checks of the boat.
DUMPER HELPER	Fastens the unloading straps around the logs. Helps the truck driver release the binders* and removes the wrappers*. Relays the signal from the boatman* to the Dump Operator* that all is clear in the pocket*. Keeps the dump area clear of bark and helps the Dump Operator service the machinery.
DUMP OPERATOR	Operates the machinery which lifts the logs from the truck and places them into the water. Watches for signals from the Dumper Helper* that all is clear in the pocket*, but also uses mirrors to see the water. Performs maintenance service and helps the mechanic* do major repair work.
LEAD YARD MAN	Scales* the logs again and makes the final decision as to whether the logs will be used for sawmill, plywood or export purposes. Marks the logs with paint so that the Stacker Operator* knows in what piles to place the logs.
LOG TRUCK DRIVER	Drives the truck from the landing to the Sort Yard*, or from the Sort Yard to the mills. Spots* the truck on directions from the Second Loader and connects the water and air brake lines.
MECHANIC	Does all the major repair work on all of the equipment used in the transportation and logging. Special mechanics also work on the tugs when necessary.
RAFTER	Puts the logs into the booms* straight and tight, attaches the swifters* and ties off the header*.

*Defined within the vocabulary section

SCALER	Physically measures length and diameter of logs to determine cubic feet of wood in each. Grades the logs as to species and use, and tells the driver whether to take the load to the Sort Yard or to the Dump*.
SECOND LOADER	Spots the truck so that trailers can be removed and logs loaded. Tells the driver when to weigh the rig and helps him put wrappers* on and tighten the binders*. Brands the logs with the company name and fills out a ticket telling truck number and type of load to be given to the office. Cuts off any limbs that may stick out or be dangerous while driving on the highway. Helps Dump Operator* perform service checks.
SHOVEL OPERATOR	Picks the logs so that the load will be safe and still contain the most possible logs. Loads the logs onto the truck. Tells the Second Loader* where to spot the truck. Performs maintenance checks of the machine and helps the mechanic do repairs.
SMALL STACKER OPERATOR	Takes the logs that have been marked by the Scaler* and places and sorts them into piles or cold decks. If the load is mixed, he may take some of the logs to the dump area and put them into the water.
TUGBOAT CAPTAIN	Pilots the tugboat up and down the river. Must know how to navigate the boat during bad weather and at night and also how to tow a log boom. Helps the mechanic* do major repairs and makes routine service checks.
YARDER BUCKER	Bucks*, limbs*, and knots* the logs in the Sort Yard*.

*Defined within the vocabulary section

RESOURCE PEOPLE LISTED IN THE RESOURCE SECTION OF THIS UNIT SHOULD BE CONTACTED AT LEAST ONE WEEK IN ADVANCE OF THEIR VISIT. THEY SHOULD HAVE AVAILABLE AN OUTLINE OF THE MATERIAL YOU WISH COVERED AND A LIST OF ANY EQUIPMENT YOU WOULD LIKE THEM TO BRING. (IF ONE OF THE CHILDREN'S FATHERS COULD BE USED AS A RESOURCE PERSON, THIS MAY BE BENEFICIAL TO THAT STUDENT AND THE CLASS AS A WHOLE.)

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Week	Monday	Tuesday	Wednesday	Thursday	Friday
1st	1-A	1-B 1-C 1-D 1-E	1-F	1-F	1-F 1-G 1-H (Test for obj. 1)
2nd	2-A 2-B 2-C	2-D 2-E 2-F	2-G 2-H (Test for obj. 2)	3-A 3-B	3-B 3-D
3rd	3-E	4-A 4-B 4-C	3-B 4-C	3-D 4-C 4-D	4-E (Test for obj. 4) 4-F
4th	3-C 5-A 3-F (Test for obj. 3)	5-B 5-C	5-D	5-D	5-E (Test for obj. 5)

The numbers on the calendar refer to activities on the following pages, which parallel objectives and goals. These are <u>suggested</u> activities in a <u>suggested</u> order which the instructor is free to modify and/or improvise.

ACTIVITIES

1-A OPENER: Begin by showing the class the COULD prepared transparency entitled FROM FOREST TO MILL. Lead the children in compiling a list of possible ways of getting the tree from the forest to the mill through questions such as the following:

What ways can you think of to get the tree from the forest to the mill?
Are log trucks the only way to transport logs?
Could logs be floated down rivers?
How would the logs be kept together?
How would the loggers get the trees that are not near the river to the water?
What other methods might loggers use to get the logs out of the woods?
(Some children may have seen balloon and helicopter logging operations in Coos County.)
List their ideas on the chalkboard.

1-B Introduce the 16MM sound film by asking the class if they think loggers really do use all the methods they have listed. Have the children underline the methods on the board that loggers would most likely use and tell why. Tell the children that they are going to view a film about transporting logs. Ask the class to be aware of the methods used and make a list of occupation titles. Have the children take notes.

Following is a list of the occupation titles discussed in the film:

Big Stacker Operator
Boatmen
Deck Hand
Dumper Helper
Dump Operator
Lead Yard Man
Log Truck Driver
Mechanic
Rafter
Scaler
Second Loader
Shovel Operator
Small Stacker Operator
Tugboat Captain
Yarder Bucker

1-C View the 16MM Sound Film, MEN WHO TRANSPORT LOGS.

1-D FOLLOW-UP: Discuss each job title in the sequence presented in the film. As each job is discussed, add it to a flow chart (such as the one on the following page) which you can draw on the chalkboard or overhead projector.

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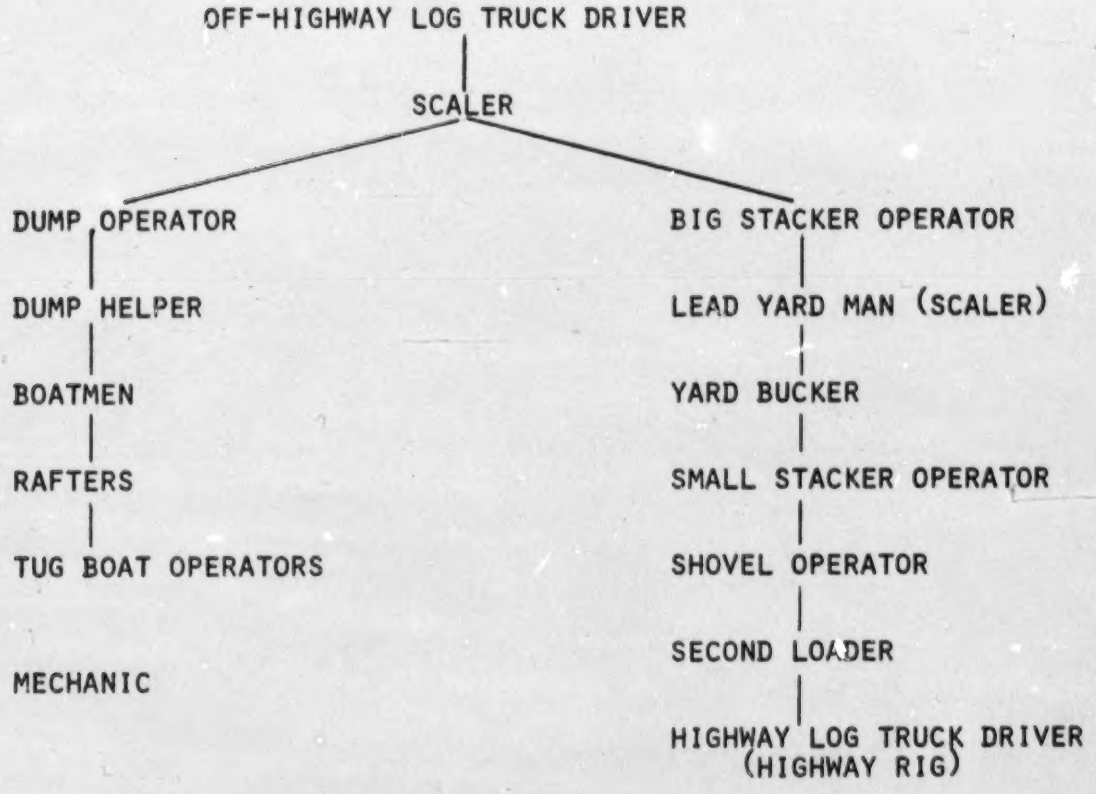
LOG TRANSPORTATION: FLOW CHART



1-E ENRICHMENT ACTIVITY: Some of the students may enjoy drawing pictures to go along with the various occupation titles. These and the job titles can then be put on a bulletin board flow chart for future reference.

1-F Tell the children that the class is going to make a mural showing all the jobs involved in getting the log from the forest to the mill. Ask for volunteers to work on each occupation. Help the children plan the layout of the mural before they begin. Decide upon the art media to be used (crayons, chalk, tempera, water colors, cut construction paper or a combination of these) and guide the children as they work. As each occupation has been added to the mural, instruct those children to write a short job description that can be put on the mural near the picture of that job. When the children have finished, use the mural to trace the progress of the log from the forest to the mill.

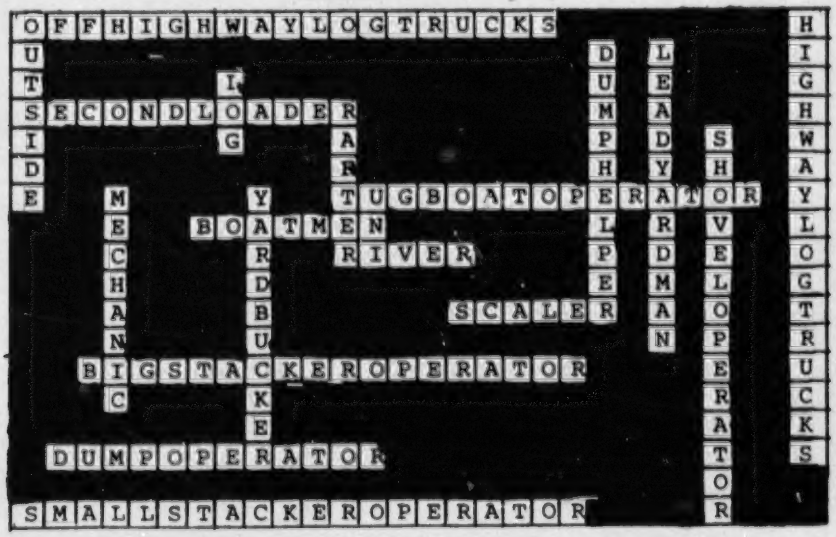
1-G ENRICHMENT ACTIVITY: When the mural is finished, the children may want to invite other classes or their parents to view their work. Select students to explain the sequence in which the jobs occur in the transportation and what each worker does.

1-H EVALUATION ACTIVITY: (Test for goal and objective 1)

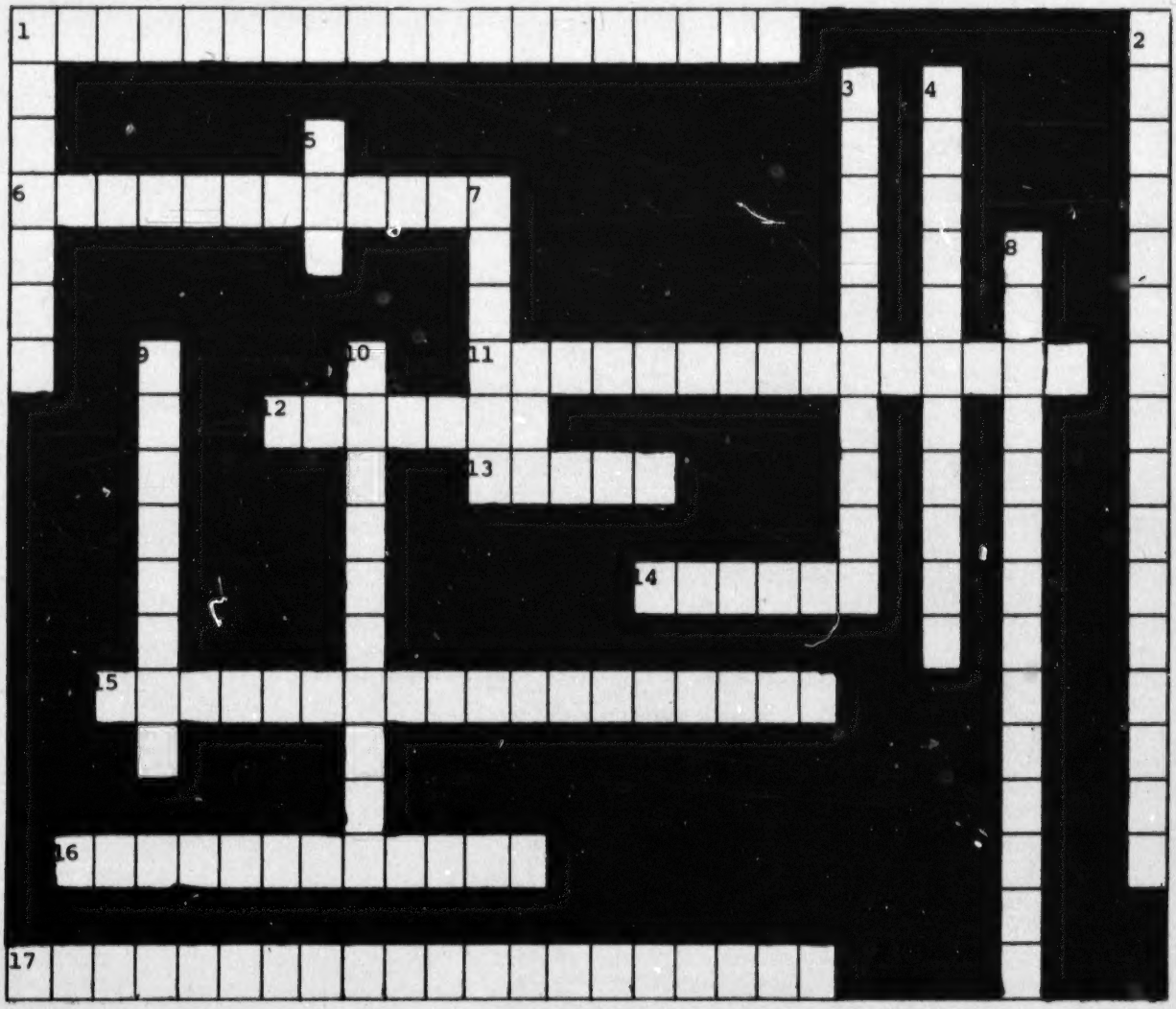
MATERIALS NEEDED: Crossword puzzle (thermal masters may be made of the included crossword puzzle and the clues.)

OBJECTIVE 1: Given the crossword puzzle of job descriptions and the random list of key occupations, each learner will complete the puzzle with a level of accuracy satisfactory to the teacher, and within a time limit imposed by the teacher.

KEY:



CROSSWORD PUZZLE



DIRECTIONS: Fill in the crossword puzzle with words from the list below using the clues on the following page. Do not leave a space between words. For example, Dump Helper would appear as Dumphelper in the puzzle. There are more words listed below than you will need, so be careful!

Shovel Operator	Second Loader	Log
Dump Operator	Dump Helper	Rafter
Tugboat Operator	Big Stacker Operator	Highway Log Trucks
River	Yard Bucker	Small Stacker
Boat Dock	Choker	Boatmen
Lead Yardman	Outside	Saw Mill
Mechanic	Off Highway Log Trucks	Scaler

CROSSWORD PUZZLE

ACROSS

1. Log trucks that transport the log from the forest to the sort yard.
6. The man who helps load logs being transported to the mill.
11. The man who tows logs down-river to the mill.
12. The man who pushes logs with a boat in the log pond.
13. Water used to float logs to the mill.
14. The man who figures out how many cubic feet of wood is in each log on the log truck.
15. The man who unloads logs from trucks that have come from the woods to the sort yard.
16. The man who unloads logs from trucks and puts the logs into the log pond.
17. The man who sorts the logs into different piles in the Sort Yard.

DOWN

1. Most of the men at the Sort Yard work here. (Opposite of inside)
2. The trucks which transport logs from the Sort Yard to the mill.
3. The man who helps the dump operator to unload logs from trucks into the water.
4. The boss in the Sort Yard. He makes the final measurements of the log.
5. A tree that has been cut into small pieces.
7. The man who pushes logs on the pond into groups with a long pole.
8. The man who loads logs onto the highway trucks.
9. The man who repairs all the equipment used to transport logs.
10. The man who cuts the limbs off logs and squares the ends.

ACTIVITIES

2-A Introduce the COULD prepared 16MM sound film entitled MEN WHO TRANSPORT LOGS. Ask questions such as the following to help the students conclude that they need to know more about the vocabulary used by the men working in log transportation.

FOR USE WITH THE FILM ENTITLED MEN WHO TRANSPORT LOGS:	QUESTION:
Boatmen	Where is the pocket in this picture?
Rafter	Where is the swifter in this picture? The peakers? The headers?
Log Trucks	Where is the rig in this picture? Does this picture show a tractor? Where?

Help the children to conclude that they still need more information about the vocabulary used in the log transportation industry. Tell them you have a film that will help explain some of the words that the class has just been discussing. Have the following words listed on the board, overhead projector or on ditto sheets for individual use:

binder	grapel	log pond	scaling stick
boom	hard hat	off highway rigs	shovel
boom sticks	header	peakers	sort yard
brail	highway rig	peavy or peavey	spot
buck	knot	pike pole	stacker
cork boots	lane	piling	strap
crane	limb	pocket	swifter
dump	log boom	raft	tractor
environment	log bronc	scale	wrappers

Depending on the size of the class, assign 3-4 words to a small group of students. Tell them that they will have to define these words for the class after the film presentation.

2-B View COULD prepared 16MM sound film entitled MEN WHO TRANSPORT LOGS.

2-C FOLLOW-UP: Discuss the definitions of each word by having the children assigned that word write the definition on a class master list on the board, overhead projector or butcher paper; or have the children copy down the definitions on their own ditto sheets as the definitions are given orally.

2-D Have the children make up flash cards of all the vocabulary words. On one side they are to put the word and on the reverse side, the definition. When the children finish these, have them work in groups of two or three showing each other the word and asking for the definition or showing the definition and asking for the word. (THE CHILDREN SHOULD USE THESE CARDS AS OFTEN AS THE TEACHER FINDS NECESSARY THROUGHOUT THE REST OF THIS UNIT.)

2-E ENRICHMENT ACTIVITY: Use the flash cards to label the mural done in Activity 1-F. Mount the cards on or around the mural and yarn or string to lead from the card to the appropriate portion of the mural.

2-F ENRICHMENT ACTIVITY: Have the children volunteer to draw a picture to help visually define the vocabulary word or words of their choice. When they finish their drawings, instruct them to write a caption for the picture. This caption should define the word.

2-G Introduce riddles to the class by asking questions such as the following:

How many of you have ever heard a riddle?
Can someone tell the class what a riddle is?
Do you know a riddle? Tell it to the class and we will see if we can guess what it is?
Give the class the riddles below and let them attempt to answer them.

I am a large group of logs being towed down the river to the mill. What am I? (Log boom or raft)

I am made of hard materials and I set on top of most lumber worker's heads. What am I? (Hard hat)

As a class, compose a riddle for the word, Stacker.

2-H EVALUATION ACTIVITY:(Test for Goal and Objective 2)

MATERIALS NEEDED: Four 5 x 8 cards for each learner; the vocabulary words with student-derived definitions as made in Activity 2-C available to each learner.

OBJECTIVE 2: Given the vocabulary words as listed in the VOCABULARY section of this unit, with student-derived definitions, each learner will choose at least four words and write a riddle for each on a 5 x 8 card with answer to the riddle on the back of the card. The standard of quality for the riddles and the time limit shall be imposed by the teacher.

(Let each child read one of his riddles to the class and have the class guess the answer. Those riddles not read may be put on a bulletin board. Be sure to leave a space for the children to write answers under each card.)

ACTIVITIES

3-A Begin by discussing with the children what they would like to know about a job before they would apply for that position. Ask the class, "If you were thinking about going to work, what questions would you like to ask your future employer about that job?" Since this may be the first time the children have thought along these lines, lead them to include the following points in their list:

Special vocabulary	Pay
Likes and dislikes	Special clothing required
Job description	Physical demands and aptitudes
Work hours	Working conditions

List their suggestions on the chalkboard or overhead projector. When the children have finished compiling their list, instruct them to make up a questionnaire that could be used during a job interview.

3-B Ask the class how they might make use of their questionnaires to find out more about jobs in log transportation. Lead them to conclude that the best way might be to interview the men who have those jobs.

Tell the class that you have arranged to have a field trip to a log truck facility. (See RESOURCE section of this unit.) Let the children volunteer to ask questions during the interview from their questionnaire. (By accepting a volunteer for each question, more children will have a chance to participate.) Encourage the children to bring their camera along on the field trip and take pictures for personal use and use by the class. If the teacher wishes, his camera or one owned by the school can be used to record the field trip and the slides edited with an audio tape script for use by classes in years to come. Also, if the school, children, or teacher has a tape recorder, a student may be taught its proper use and operation and allowed to tape the guide on the field trip. Another good idea would be to contact the local news media and inform them of your planned trip, the date and the time. Many times they will send a photographer to record the trip for the general public. Don't forget any local television stations in the area and don't be afraid to call! These people are always happy to obtain newsworthy articles and pictures.

ALTERNATE ACTIVITY: Discuss with the class how to arrange a field trip over the phone by use of questions such as the following:

> How do you think we should go about arranging a field trip? If we did call the person, what do you think he might like to know about us? (School, grade, class, what we are studying, when we would like to come, how many will be there visiting, what are some of the things the class would like to know.)

The children might enjoy role playing the part of the student calling about the possibility of a visit and the person being called. Ask

the class for volunteers for the role playing. After several have tried, ask the class, or you may decide, which of the students will make the call. (The teacher should have in mind the trucking facility that she wishes the students to visit before this activity. See RESOURCE section of this unit.) The selected child will make the call and report back to the class.

ALTERNATE ACTIVITY: Discuss with the class how to arrange a field trip through the use of a written letter by asking questions such as the following:

> How do you think we could go about arranging a field trip? If we did write a letter to the company, what do you think they might like to know about us? (School, class, grade, what we are studying, when we would like to visit, how many will there be visiting, what are some of the things the class would like to know.)

If the children do not know how to head a letter, this might be a good time to discuss it.

Then, have the children each write a letter to the company asking the questions and giving the information decided upon by the class. Have the children each read their letter to the class and let the class decide which one is to be sent, or you as the teacher may read these and decide. When the reply comes to the school, let a student read it to the class.

ALTERNATE ACTIVITY: If one of the fathers of the children is a log truck driver, it might be possible to arrange for him to bring the truck to the school. From the activities listed under 3-B select one that would be the most appropriate for inviting the father to class. (See RESOURCE section of this unit.)

Another good idea would be to contact the local news media to inform them of the resource person's visit and demonstration time, date and location. Many times they will send a photographer to record the visit for the general public. Don't forget any local television stations in the area and do not be afraid to call! These people are always happy to obtain newsworthy articles and pictures. Be sure to clear this with your resource speaker as they may be bothered by photographers and newsmen.

3-C FOLLOW-UP: Listen to the taped interview (if a tape recorder is used) listing the information on the chalkboard or overhead projector. Help the children design a chart listing job title and information gathered from the interview.

Let some of the children transfer this chart to butcher paper or tagboard and mount the chart on a bulletin board for future reference.

3-D Following the same procedures as in Activity 3-B, arrange for a field trip to a Sort Yard where transportation of logs by water and truck may be closely observed by the children. (See RESOURCE section of this unit.)

FOLLOW-UP: Listen to the taped interview or review orally information gained on the field trip, locating each job on the job flow chart (Activity 1-B or the mural, Activity 1-F). Enter this information on the chart from Activity 3-A as you discuss.

3-E ENRICHMENT ACTIVITY: GAME - WHAT'S MY LINE

Teacher Preparation----None

Procedure----------Select a student to be the candidate. He sits at the front of the room with the teacher. Each student may ask the candidate questions about his job. These questions must be of the yes and no variety. The teacher may help the student if there is some doubt in the candidate's mind as to how to answer the question.

Rules----------One student may ask questions until he receives a no answer from the candidate. At that time, another student gets a chance to ask questions. Each question which is answered with a no is worth 5 points to the candidate. The end of the game comes when the candidate reaches 25 points or the class guesses his or her occupation. At the end of the game, the candidate who did the best job of stumping the class will have the most points.

3-F EVALUATION ACTIVITY: (Test for Goal and Objective 3)

MATERIALS NEEDED: The following list of occupation titles and questions from the objective on the board, overhead projector or ditto sheets.

Big Stacker Operator
Boatmen
Deck Hand
Dumper Helper
Dump Operator
Lead Yard Man
Log Truck Driver
Mechanic
Rafter
Scaler
Second Loader
Shovel Operator
Small Stacker Operator
Tugboat Captain
Yarder Bucker

OBJECTIVE 3: Given a choice of occupation titles in the log transportation industry and 30 minutes, each learner will select the title of the job he would like to have and write a job description in paragraph form including answers to at least three of the following questions:

What hours do I work?
In what type of physical condition do I have to be to work on my job?
Do I have to wear any special clothing? Why?
What is my equipment called?
Why do I like to do this type of work?
What is dangerous about my job?

(Give instructions such as the following: I would like you to write a paper about the job you like most in the log transportation industry. I will give you a list of the jobs we have discussed and a list of questions to help to know what to include in a good job description. You will have 30 minutes to finish your paper.)

ACTIVITIES

4-A Ask the children questions such as the following to start them thinking about the environment:

> How does weather affect you and your school work when it rains? When it snows? When the wind is blowing? When it is sunny? What other things can you think of that affect you and your school work?
> Do your parents have jobs in which they must work outdoors? What things affect their work?
> (Lead the class to talk about how people and their surroundings have a mutual influence.)
> Who knows what we call our surroundings?
> (Lead them to the word environment, if they don't already know it.)

4-B Write hypothesis on the chalkboard or overhead projector. Ask for a volunteer to look up the word hypothesis and read the definition to the class. Have another student repeat the definition in his own words. Ask for volunteers to make a hypothesis about the effect a heavy rain would have on a dirt road. (It probably would get muddy and slippery and hard to drive on or it may even wash the road out.)

4-C Tell the class that we will try our hand at making a hypothesis about problems that affect the workers in the log transportation industry. Show the class the COULD prepared study prints entitled THE LOG TRANSPORTATION ENVIRONMENT, by displaying them one at a time and asking the following

> Hypothesize the effect a heavy rainstorm would have on the environment in this picture. A month of sunshine without rain. Hypothesize what might improve the environment in this picture.

Lead the class to consider the overall effect log transportation has on the environment, and the environment on log transportation in each picture. It may be helpful to make a list of their hypotheses on the board or overhead projector, and then transfer them to 3 x 5 cards and place them below each study print in a bulletin board display.

ALTERNATE ACTIVITY: Have the students hypothesize the effect of log transporting (road building and log rafting) on different environmental situations, such as a hillside with much vegetation, a hillside with little vegetation, a clearcut area, a sandy area, etc. Suggest that they check their hypotheses by simulating the various conditions. The following may be helpful in constructing the simulations:

Heavily vegetated area:	cut a piece of thick sod and place it in a wooden box and prop the box up to make a hillside.
Lightly vegetated area:	place a small plant (with the root systems) in a wooden box with soil (sandy, top soil, clay, or gravel, or a combination of these)

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Clearcut area: place a piece of sod with the plants trimmed down to the soil, in a wooden box.

If your school is located near a vacant lot or wooded area, a number of environmental conditions could be constructed in the out-of-doors with some imagination. The students could try building roads of various types and inclines on the various simulations and expose them to rain (water from a sprinkling can), sunshine (heat lamp). The students should be encouraged to keep accurate records of their observations . Their hypotheses should be evaluated in light of their data, and a class discussion should be devoted to forming some conclusions about the effect of log transportation on the environment and the environment on log transportation.

4-D ENRICHMENT ACTIVITY: Have the students arrange the COULD prepared study prints THE LOG TRANSPORTATION ENVIRONMENT in a display with the print showing the least amount of concern for the environment progressively to the one with the most concern for the environment. Allow a chance for students to question each other and defend their opinions concerning the arrangement of the study prints.

4-E EVALUATION ACTIVITY: (Test for Goal and Objective 4)

MATERIALS NEEDED: The set of COULD prepared study prints entitled THE LOG TRANSPORTATION ENVIRONMENT arranged on the chalkboard, chalk rail or in a bulletin board display so all learners can easily see them. Each print should have a number for identification.

OBJECTIVE 4: Given the COULD prepared study prints entitled THE LOG TRANSPORTATION ENVIRONMENT and twenty minutes, each learner will select the print that represents the best method of transporting logs and preserving the environment, and the print that represents the worst method of transporting logs and preserving the environment; and write a paragraph for each explaining the reasons for his choice. The teacher will judge the validity of each learner's response.

(Write on the board or overhead projector the following directions:
You will have twenty minutes to write two paragraphs using the two starter sentences below. Be sure to include as much information as you can in the time allowed.

Study print number _____ shows the best way of transporting logs because. . .

Study print number _____ shows the worst way of transporting logs because. . .)

4-F ENRICHMENT ACTIVITY: Those children who finish early may wish to quiz each other using the vocabulary flash cards they made in Activity 2-D.

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ACTIVITIES

5-A Lead the class to consider what factors might cause log transportation to be temporarily or permanently halted. Questions such as the following may be helpful:

> What might happen in the woods to cause fewer logs to be hauled? (Fire, insects, poor cutting and reforestation practices, etc.)
> What might happen in log transportation to cause fewer logs to be hauled? (Strike, closure of rivers and bays to rafting, poor road conditions, etc.)
> What else might cause fewer logs to be hauled? (Less demand for wood products, fewer government sales of trees, mills shutting down, etc.)

5-B Use the job flow chart from Activity 1-B or the mural from Activity 1-F as a basis for a discussion of how those workers listed might be affected if there were no logs to haul in all of Coos County. Ask questions such as the following about each job listed:

> What would happen to people working in this job if there were no logs to haul in all of Coos County?
> What new job might they look for which used the same skills?
> Do you think this worker would stay in Coos County? Why or why not?
> How would this worker's family be affected?

Make a chart on the chalkboard or overhead projector listing jobs and the children's responses.

5-C Show the class the COULD prepared transparency entitled WHAT MIGHT HAPPEN IF. . . . . Lead the children in a class discussion of how the loss of jobs and wages discussed in Activity 5-B would affect each business or worker. Ask questions such as the following:

> If workers in log transportation lost their jobs, what would happen to this business?
> What affect would this have on how many people worked in this business?
> If these workers lost their jobs, what might they do to earn a living?
> Would people living in this area still need this type of business? Why or why not?

As the children respond to each question, encourage them to explain why they think this would happen.

5-D ENRICHMENT ACTIVITY: Group the children who are interested in the same business or occupation and have them present a panel discussion to the class dealing with the questions asked in Activity 5-C. Allow the class to ask questions of the panel or add any possible effects not discussed by the panel.

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5-E EVALUATION ACTIVITY: (Test for Goal and Objective 5)

MATERIALS NEEDED: None

OBJECTIVE 5: Each learner will list, in a time span imposed by the teacher, at least six ways in which loss of income provided by jobs in the log transportation industry would affect the economy of Coos County.

(Give instructions such as the following: On a piece of paper, I would like you to list at least six ways in which people's lives would be affected if all workers in log transportation lost their jobs. The teacher might write the instructions on the board. Be sure they know how much time they will have.)

COULD PREPARED MATERIALS

	Activity No.
16MM SOUND FILM	
Men Who Transport Logs	1-C
TRANSPARENCY SETS AND MASTERS	
From Forest to Mill	1-A
What Might Happen If.....	5-C
STUDY PRINTS	
The Log Transportation Environment	4-C, D

RESOURCES

RESOURCE PEOPLE

The following people have consented to act as resource people. They should be contacted at least one week in advance of their visit to give them time to prepare for their presentation and gather materials needed.*

Name	Occupation	Employer	Phone No.
Mr. Ken Lewis	Comptroller	Al Pierce Lumber Co.	267-4113
Mr. David Sant	Public Relations	Weyerhaeuser Co.	756-5121, Ext. 255
Mr. John Mingus	Public Relations	Georgia Pacific Corp.	269-1171 Ext. 43
Mr. Darrel Boyer	Dispatcher	Coos Trucking Co.	267-2104
Dr. Paul Rudy	Biologist	Oregon Institute of Marine Biology, Charleston	888-4297

*Some parents of children in your classroom may be able to serve you as resource speakers. If this is the case, they should be contacted.

RESOURCE OUTLINE: LOG TRUCK DRIVER

DATE OF VISIT: _____

TIME OF VISIT: _____

SCHOOL AND ADDRESS: _____

SCHOOL PHONE: _____

TEACHER'S HOME PHONE: _____

A. If at all possible, the resource person should bring a log truck and as much other equipment used on the job as possible. The children will learn more about the job if they can see the truck and the equipment used.

B. Points to discuss

1. Why you became a truck driver
2. Entry requirements for your job; physical and educational
3. What you like most about your job
4. What you least like about your job
5. Working conditions
6. Pay
7. Chances for promotion

C. Vocabulary words to cover with the children

1. Binder
2. Highway rig
3. Off Highway rigs
4. Scale (to scale a log)
5. Strap
6. Tractor
7. Wrappers

The lumber industry today employs over 1-1/2 million people in the mills and woods operation.

The log transportation industry in Coos County employs over 1000 people who are directly involved in getting the log from the woods to the mill. These men play an important part in the lumber industry of our county.

When one thinks of log transportation, a wide variety of modes come to mind; ships, tugs, railroads, trucks, etc. In the area of trucking alone there are log trucks, chip trucks, trucks which haul finished lumber and paper products and others. For the purpose of clarity, modes of transportation used to move lumber and lumber products out of our area will not be covered in this unit, but in the sixth grade unit, Marketing Wood Products (Unit L #4), as they play a major role in that facet of the lumbering industry.

Two major factors affect the type of transportation used in the county. One is the geographical location of the bay and its tributaries making possible the rafting of large booms of logs containing many times the cubic feet of wood that can be transported by trucks at the same cost. The second is the geographical location of the forests in relation to the mill. This nearness makes log transportation by truck economically desirable over other possible modes.

At this point, you may be wondering how over 1000 people could be employed just driving trucks and piloting tugs. But by thinking about trees in the forest, you can provide your own answer. As you know, very few forests are comprised of pure stands of timber. Species of many types grow together throughout the county and the clear cutting method of logging yields many different species of logs. Therefore these logs must be sorted by species, grade of lumber and intended use before they arrive at the mill where the space needed to do this job is unavailable. This sorting is the job of many workers at the Sort Yard. Along with these men are work crews of mechanics for maintaining the equipment in working condition.

Below, you will find a short guide to help the teacher understand at what point in the transportation process each job enters.

TRANSPORTATION JOBS FROM THE FOREST TO THE MILL

1. OFF HIGHWAY RIGS bring the logs from the logging site to the SORT YARD.
2. SCALERS measure the log to determine cubic feet of wood and intended use. They tell the TRUCK DRIVER where to take the load; to the SORT YARD, or to the DUMP which is near the yard.
3. In the SORT YARD, the BIG STACKER OPERATOR unloads the logs and places them on the ground.
4. The LEAD YARD MAN again scales the log and indicates where it is to be and marks the log indicating what pile it is to be placed.
5. The YARD BUCKER then bucks, limbs and knots the log.
6. The SMALL STACKER OPERATOR sorts the logs into piles as indicated by the mark placed on the log by the HEAD YARD MAN.
7. From these cold decks, the SHOVEL OPERATOR selects logs to form the load on the HIGHWAY RIGS and begins loading the trucks.
8. The SECOND LOADER helps spot the truck for proper loading.
9. The HIGHWAY RIG is sent on its way.

10. If the SCALER sends the logs to be dumped, the DUMP OPERATOR spots the truck for proper unloading and unloads the logs.
11. He is assisted by the DUMP HELPER.
12. The BOATMEN sort the logs on the water according to marks and shoves them into lanes.
13. The RAFTER pushes the logs into a tight boom and ties off the header.
14. From this point, a company contracted to tow the booms takes over. The DECK HAND attaches the boom to the tug and unties the boom from the pilings.
15. The TUGBOAT CAPTAIN then tows the logs to the mill or lower booms where they will be stored until needed at the mill.

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BOATMAN

JOB DESCRIPTION

Drives the log bronc. Logs are sorted when they are put into the water as to sawmill and peeler. The logs in these groups (called brails) are then boated into the lanes by two other boatmen. Changes oil and lubes boat.

EQUIPMENT

Gas or diesel broncs, life jacket, hard hat, cork boots, rain gear.

MINIMUM QUALIFICATIONS

Education: High school or less.

Training: On the job. Start as choker setter or cutting crew, then work as a rafter and finally as a bronc man.

PHYSICAL DEMANDS AND WORKING CONDITIONS

Good legs and sense of balance. Work in weather in which wind blows logs back out of the boom. Tide washes logs out of the boom. Noise from broncs.

WORKER CHARACTERISTICS

Aptitudes: Good balance and enjoys the out-of-doors. Good manual dexterity.

Temperaments: Even tempered. If you lose your temper, you might capsize the boat. Also concentration--must watch the lights and work with others on getting the job done.

PROMOTIONS

Could become lead man on the show.

DECK HAND

JOB DESCRIPTION

Gets off the boat and unties the rafts and attaches the towline to the log boom. If the boom breaks up during towing, he must reassemble the boom on the water. Helps the captain do routine service checks and helps the mechanic do major repair work. Keeps the boat clean and painted and cooks for the captain.

EQUIPMENT

Life jacket and cork boots.

MINIMUM QUALIFICATIONS

High school education

PHYSICAL DEMANDS AND WORKING CONDITIONS

Must have a good sense of balance for walking on logs and be able to swim. Time is spent both outside and in the tug cabin.

WORKER CHARACTERISTICS

Aptitudes: Possess a good sense of balance and be strong willed.

PROMOTIONS

If he learns by observation and by relieving the captain, studies the navigation aids and RULES OF THE ROAD, and passes the State required tests, he may become a captain.

DUMP HELPER

JOB DESCRIPTION

Fastens the unloading straps around the logs on the truck and helps release the bindings. Then moves to the back of the truck and waits for the signal from the boatmen indicating that they are clear of the area. He relays this signal to the dump operator, who lifts the load from the truck. The driver drives away and the logs are lowered into the water. Keeps things picked up in the area of the dump. After the load is dumped, respots the rigging for the next truck. Helps the operator service the machine.

EQUIPMENT

Hard hat, gloves, rain gear.

MINIMUM QUALIFICATIONS

Education: High school or less.

Training: Worked way up from choker setter.

PHYSICAL DEMANDS AND WORKING CONDITIONS

Average physical strength and ability to move quickly. Works outside. Noisy conditions because of the trucks, dump diesel, and the boats or log broncs.

WORKER CHARACTERISTICS

Aptitudes: Concentration and safety awareness.

Temperaments: Even tempered.

PROMOTIONS

Observes dump operator and learns how to run machines. May be promoted to dump operator.

DUMP OPERATOR

JOB DESCRIPTION

Spots the truck so that the logs will be balanced during unloading. Watches the helper for the signal that all is clear in the pocket. (Also uses mirrors to see the pocket.) Turns on the red warning lights before lifting the logs off the truck, waits for the truck driver to move the truck and lower the logs into the water. Does maintenance type service and helps the mechanic with major repairs.

EQUIPMENT

Diesel engine, hard hat and protective earphones, signal lights and convex mirrors.

MINIMUM QUALIFICATIONS

Education: High school education or less.

Training: Started as choker setter and worked way up to chaser, second loader, and then to this job.

PHYSICAL DEMANDS AND WORKING CONDITIONS

Good hand-foot coordination and eyesight. Inside work. Noise caused by diesel and trucks.

WORKER CHARACTERISTICS

Aptitudes: Mechanically inclined. Good manual coordination. Must have depth perception and a knowledge of lines and cables.

Temperaments: Even tempered.

PROMOTION

Has reached his limit unless he wishes to be a loader operator.

LEAD YARD MAN

Sort Yard

JOB DESCRIPTION

Scales the logs again and makes the final decision as to whether the logs will be used for the sawmill, peeler (plywood), or export. Marks the logs for bucking and also uses paint to mark the log so the stacker operator will know in what pile to place the logs. In charge of all men in the yard.

EQUIPMENT

Measuring tape, hard hat and rain gear.

MINIMUM QUALIFICATIONS

Education: High school education or less.

Training: Started as choker setter and worked way up.

PHYSICAL DEMANDS AND WORKING CONDITIONS

Average physical condition. Works outside in mud and dust. Noise from equipment working in the area is loud.

WORKER CHARACTERISTICS

Aptitudes: Ability to recognize tree species at a glance and recognize the best use for that tree. Must be able to organize and keep people busy.

PROMOTION

Has about reached his limit.

LOG TRUCK DRIVER

JOB DESCRIPTION

Drives the empty log truck to the logging site and spots the truck for unloading of the trailer. Hooks up the air brakes and water hoses needed to cool the brake drums when going down a long hill. Drives the truck forward and backward so that the loader operator can place the logs on the truck without moving his machine and so that the logs will be balanced evenly over both sets of wheels. Secures the logs placing a strap and binder around the log. This prevents the logs from rolling off the truck on corners. Drives the truck to the sort yard (shifting through the 20 gears). At the sort yard, he spots the truck so the stacker operator can grip the logs with the stacker tongs. At this time, he releases the binders and removes the straps. After the load has been removed, he unhooks the trailer and uses an electric or diesel winch to lift the trailer onto the back of the truck.

EQUIPMENT

Log truck (has 8 drive wheels on the tractor and 8 wheels on the trailer), straps and binders, hard hat.

MINIMUM QUALIFICATIONS

Education: Eighth grade education and a good driving record. Some knowledge of the machinery and the ability to drive large equipment.

PHYSICAL DEMANDS AND WORKING CONDITIONS

Coordination of feet and hands in shifting gears and driving. How safe the job is depends on the skill of the driver and the road conditions. He is in the truck out of the weather most of the time. Somewhat noisy.

PROMOTIONS

Might become log truck dispatcher and buy his own trucks and become an independent contractor.

MECHANIC

JOB DESCRIPTION

Maintains all the logging equipment necessary to get the log from the woods to the mill, such as cats, cranes, yarders, shovels, all construction equipment, air compressors, log trucks, dump trucks, stack loaders, pick-ups, busses, and high lead yarders.

EQUIPMENT

Tools necessary to do mechanical repair. Hard hat.

MINIMUM QUALIFICATIONS

Education: Full background in basic mechanics in both gas and diesel engines. Understanding of what each part of the machine does and knowledge of what is wrong with an engine when it does not work.

PROGRESSIVE HELPER PROGRAM: Boys may be hired after completing high school as a fueler or oiler so that he becomes familiar with the equipment. From this position, they move into the Progressive Helper Program and work with the experienced mechanic getting on-the-job training. As they progress into the program, they gain knowledge and buy the necessary equipment.

PHYSICAL DEMANDS AND WORKING CONDITIONS

Capable of doing the manual work, but not dependent upon size and strength. The main thing is knowing how to approach the job and what to do. Always in the weather. Night shift works on trucks in the shop. The noise of the shop and equipment is sometimes loud. "It's mud and rain and slop in the winter and hot and dusty in the summertime. . .it's miserable year around. You have to get down and work on this equipment where it breaks down."

WORKER CHARACTERISTICS

Aptitudes: Good manual dexterity and a desire to accomplish tasks in less than perfect working conditions. Necessary to learn about new equipment.

PROMOTIONS

Depends on the work output and attitude toward the work. If he is a hard worker and knows his job, he could be promoted to shop foreman.

RAFTER

JOB DESCRIPTION

Put the logs into the rafts straight and tight. Hold the spreads for the boatmen and see that the rafts are made full and there are no spaces left in the boom. Try to get as many logs into the raft as possible. Attach swifters and close off header.

EQUIPMENT

Ax, peavey, pike pole, life jacket, rain gear, cork boots, and hard hat.

MINIMUM QUALIFICATIONS

Education: High School or less

Training: Start as a choker setter and work way to dump helper, then to rafter.

PHYSICAL DEMANDS AND WORKING CONDITIONS

Good legs and fairly strong body. Good sense of balance, ability to swim. Works outside in the weather. River currents and wind cause the logs to move out of the raft.

WORKER CHARACTERISTICS

Aptitudes: Good sense of balance, swimmer and good physical condition.

Temperaments: Concentration on your work and not easily discouraged by weather, waves, wind and their effect on your work.

PROMOTIONS

To Lead Yard Man.

SCALER

JOB DESCRIPTION

Physically measures the log for length and diameter. Calculates how many cubic feet of wood is in the log. Tells the truck driver whether to take his load to the sort yard or to the dump. Marks the log for export, peeler, sawmill, etc., according to grade and species.

EQUIPMENT

Tape measure, scaling stick, waterproof pad with pencil, hard hat, and rain gear.

MINIMUM QUALIFICATIONS

Education: High school graduate or better with emphasis on math.

Training: Break-in period where he works with the scaler. May be placed on job at truck ramp, sawmill, log pond or plywood mill. They rotate on the job at these various places.

PHYSICAL DEMANDS AND WORKING CONDITIONS

Average physical condition and able to climb logs. Out-of-doors working in all types of weather.

WORKER CHARACTERISTICS

Aptitudes: Accurate and quick with numbers. Only allowed 5% error.

Temperaments: Even tempered and careful worker. Not easily discouraged by bad weather.

PROMOTIONS

Has about reached his limit.

SECOND LOADER

JOB DESCRIPTION

Spots the truck for the stacker operator so that he can remove the trailer with the machine. Helps the driver get the truck ready for loading, then goes to the front of the truck to help spot. On the highway trucks, the logs must be balanced evenly according to weight on the trailer and the tractor. The second loader tells the shovel operator to put that much more on or take that much off the truck. Helps the driver put on the wrappers and binders. Puts the brand on the logs. Cuts off limbs that would be dangerous on the highway load.

EQUIPMENT

Paint stick, hard hat, ticket pad, luminous vest, chainsaw and ax.

MINIMUM QUALIFICATIONS

Education: High school or less.

Training: Start as choker setter and move to the cutting crew or chaser, then to second loader in the woods.

PHYSICAL DEMANDS AND WORKING CONDITIONS

Average physical ability. Weather and mud make the work more difficult. Noise from the equipment can be bothersome. Working outdoors is a must.

WORKER CHARACTERISTICS

Aptitudes: Be willing to do physical work and able to judge weight distribution of logs on the truck.

Temperaments: Be able to get along with the truck drivers and shovel operators.

PROMOTIONS

To crane operator if the opening comes up and you have learned while working at the second loader job.

SHOVEL OPERATOR

JOB DESCRIPTION

Picking the logs to get a safe load and get the most logs on the truck. Loading these logs onto the truck. Small maintenance jobs and upkeep as well as lube jobs and oil changes. Telling the second loader where to spot the truck.

EQUIPMENT

Hard hat, protective earphones.

MINIMUM QUALIFICATIONS

Education: High school or less. Willingness to learn. Mechanical course work.

Training: On the job. Started as a choker setter and worked way up to second loader and then by observation learned to operate the shovel.

PHYSICAL DEMANDS AND WORKING CONDITIONS

Physical coordination of hands and feet. Depth perception. In out of the weather and fairly clean. Hot during the summer. Noise is high, but cab is insulated and you wear protective earphones.

WORKER CHARACTERISTICS

Aptitudes: Fairly good manual dexterity.

Temperaments: Must keep even tempered and desire to master the machine.

PROMOTIONS

Unless he wanted to go back into the woods, this is as high as he can go.

STACKER OPERATOR

JOB DESCRIPTION

Big Stacker: Drives up to the truck, positions the stacker and grasps the load. After the truck driver releases the bindings and removes the straps, he unloads the logs and puts them in a pile for the Head Yard Man to scale.

Small Stacker: Takes the logs that have been marked by the scaler, sorts and places them into piles at different places in the yard. He might also, on a mixed load, take some of the logs to the water.

EQUIPMENT

Hard hat, stacker. Protective earphones to cut out the noise of the machine.

MINIMUM QUALIFICATIONS

Education: High school or less. Must know about the machine and how to change the oil and lube it. Help the mechanic with major repair.

Training: Started as a choker and worked his way to shovel operator, then bid on the stacker job. Learned by previous experience.

PHYSICAL DEMANDS AND WORKING CONDITIONS

Average physical condition. Needs coordination of feet and hands and knowledge of balances and weights. Noise from the machine makes necessary the wearing of protective headphones. Inside the cab, they are out of weather and warm in the winter, but unless they have air conditioners, they are hot in the summer.

WORKER CHARACTERISTICS

Aptitudes: Ability to measure and judge weights and balances. Ability to handle the machinery and its upkeep.

Temperaments: Enjoy working in a job where there is a lot of driving and sitting. Be able to work with others, and yet be able to work on your own.

PROMOTIONS

Might become yard foreman.

TUG CAPTAIN

JOB DESCRIPTION

Pilots the tug on the bay or river. Must know river navigation and how to tow a boom. Performs routine service checks and helps the mechanics do repair work.

EQUIPMENT

Life jacket.

MINIMUM QUALIFICATIONS

Education: Must have a high school education heavy in math and a boat pilot's license. Most captains started out as deck hands.

PHYSICAL DEMANDS AND WORKING CONDITIONS

Average physical condition with good eyesight. Works inside pilot house. Must navigate the river at night and during all types of weather.

WORKER CHARACTERISTICS

Aptitudes: Must be quick with chart reading and alert to the dangers of the river. Strong willed.

PROMOTIONS

He can become captain of a larger vessel once he passes the pilot's test for that size of boat.

YARD BUCKER

JOB DESCRIPTION

Bucks the log where marked by the scaler. Also limbs and knots logs.

EQUIPMENT

Power chainsaw, cork boots, hard hat, visor to fold over the eyes to protect them from flying chips.

MINIMUM QUALIFICATIONS

Education: High school or less

Training: Any job in the woods, from the choker setter to cutting crew and then transfer to the yard.

PHYSICAL DEMANDS AND WORKING CONDITIONS

Good coordination and health. Size is not a factor, should be big enough to handle a power saw. Works outside. Noise from the saw is loud, but the saws have been muffled. Equipment passing is also noisy.

WORKER CHARACTERISTICS

Aptitudes: Be able to follow directions and like working out-of-doors. Even tempered as loss of temper can cause mistakes that could cost you your life and the company money, if you bucked a log improperly.

PROMOTIONS

Without going out into the woods, he is as high as he can go.